

REMARKS

Claims 2, 12 and 21-31, as amended, remain herein. Claims 1, 3-11, 15-17, 19, 20, and 32-34 have been cancelled. Claims 2, 12, 22, 24, 25 and 28-30 have been amended. Support for the amendments may be found throughout the specification and in the original claims (see, e.g., page 11, lines 24-25; page 16, lines 4-5 and lines 23-28 of the specification). Claims 2 and 12 have been amended to incorporate limitations of former claims 33 and 34. Claim 28 has been amended to moot the rejection under 35 U.S.C. § 112, second paragraph. The claims are otherwise amended for clarity.

1. Claims 1, 3-10 and 19 were rejected under 35 U.S.C. § 103(a) over Nishimoto U.S. Patent Application Publication 2002/0036360 in view of Sato et al. JP 11-262938. Claims 1, 3-10 and 19 have been cancelled thereby mooting this rejection.

2. Claims 2, 22-29 and 33 were rejected under 35 U.S.C. § 103(a) over Nishimoto in view of Sato. Claim 2 has been amended to include the limitations of former claim 33, which has been cancelled.

Claim 2 recites a molding method using ultrasonic vibration in which a resin material in a molten state is injected from an injection apparatus, filled into a cavity of a first mold, and cooled down to mold a product in a predetermined shape, the method comprising: providing a first mold comprising a fixed mold and a movable mold and having a plurality of product cavities to mold products, a runner by which the product cavities are connected to each other, and a resin pit located at a halfway part of the runner, wherein the movable mold comprises a

through-hole which communicates with the resin pit and which is formed in the same direction as a forward/backward moving direction of the movable mold; providing a vibrator attached to an ultrasonic oscillator and inserting a tip of the vibrator into the through-hole such that the tip of the vibrator forms a bottom of the resin pit; injecting the resin material into the resin pit and thereby filling all of the plurality of product cavities; and applying ultrasonic vibration to the resin material in the resin pit at a predetermined time.

The Office Action admits that Nishimoto does not disclose a vibrator inserted in a through-hole which communicates with a resin pit, wherein a tip of a vibrator forms a bottom of a resin pit. However, the Office Action alleges that Sato discloses a vibrator inserted in a through-hole which communicates with a cavity 4 and that a tip of the vibrator forms a bottom of cavity 4.

Sato does not teach or suggest what is missing from Nishimoto. Contrary to the assertion in the Office Action, Sato's cavity 4 is distinct from applicants' claimed resin pit which is located at a halfway part of applicants' claimed runner which connects the product cavities. Thus, the resin pit is distinct from the product cavity.

Sato discloses the use of ultrasonic vibration on a mold itself but says nothing about applying ultrasonic vibration to the resin material in the resin pit. Thus, Sato does not disclose applicants' claimed vibrator inserted into a through-hole which communicates with the resin pit, wherein a tip of the vibrator forms a bottom of the resin pit. Applicants' molding method achieves superior molding accuracy and quality. Applicants' specification explains that:

A second aspect of the present invention is directed to a molding method using ultrasonic vibration in which a resin material in a molten state is filled into a cavity of a mold and cooled down to mold a product in a predetermined shape, the method comprising

preparing the mold having a plurality of product cavities to mold the products, a runner by which the product cavities are connected to each other, and a resin pit provided at a halfway part of the runner; supplying the resin material to the resin pit and filling the resin material into all of the plurality of product cavities; and applying the ultrasonic vibration to the resin material in the resin pit at predetermined timing.

According to these methods of the present invention, the ultrasonic vibration is applied to the resin material in the dummy cavity or the resin pit so that the resin material in the dummy cavity or the resin pit may be heated and molten and a pumping effect may work to pressurize the resin material in the product cavity, and it is thus speculated that the strain of the product (product such as an optical lens) molded in the product cavity is reduced and the transferability is improved.

Applicants' specification, page 4, line 22 to page 5, line 14. Evidence rebutting an obviousness rejection includes evidence that the claimed invention yields unexpectedly improved properties or properties not present in the prior art. In re Dillon, 919 F.2d 688, 692-93 (Fed. Cir. 1990); MPEP § 2145.

The Advisory Action states that it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teaching of Nishimoto with that of Sato. However, even if Nishimoto and Sato were combined, neither Nishimoto nor Sato discloses applying ultrasonic vibration to the resin material in the resin pit. Instead, the combination would teach applying the resin material to the product cavity itself. As disclosed in applicants' specification, such configuration is effective to reduce internal strain and to improve the transferability. However, these effects are insufficient when optical lenses with higher accuracy are molded. Applicants' specification, page 3, lines 2-20.

Applicants' claims are further patentable because neither Nishimoto nor Sato discloses applicants' claimed vibrator which is inserted into a through-hole, wherein the through-hole is formed in the same direction as a forward/backward moving direction of the movable mold.

Thus, neither Nishimoto nor Sato teaches or suggests applicants' claimed invention. Nishimoto and Sato disclose nothing that would have suggested applicants' claimed invention to one of ordinary skill in the art. There is no disclosure or teaching in Nishimoto, Sato, or otherwise in this record, that would have suggested the desirability of modifying or combining any portions thereof effectively to anticipate or suggest applicants' presently claimed invention. Applicants respectfully request reconsideration and withdrawal of this rejection.

3. Claims 11, 15-17 and 20 were rejected under 35 U.S.C. § 103(a) over Nishimoto in view of Sato. Claims 11, 15-17 and 20 have been cancelled thereby mooted this rejection.

4. Claims 12, 21 and 30-32 were rejected under 35 U.S.C. § 103(a) over Nishimoto in view of Sato. Claim 12 has been amended to include the limitations of former claim 34, and claim 32 has been cancelled.

Claim 12 recites a molding machine for injecting a resin material from an injection apparatus into a cavity formed in a first mold and for compressing the resin material to mold a product in a predetermined shape, the molding machine comprising: a first mold comprising a fixed mold and a movable mold and having a plurality of product cavities for molding products, wherein the movable mold comprises a through-hole which communicates with the resin pit and which is formed in the same direction as a forward/backward moving direction of the movable mold; a runner connecting the product cavities to each other; a resin pit located at a halfway part of the runner; an injection apparatus for injecting a resin material into said resin pit, thereby filling the plurality of product cavities with resin via said runner; and an ultrasonic oscillator for

applying ultrasonic vibration to resin material in the resin pit, wherein a vibrator attached to the ultrasonic oscillator, is inserted into the through-hole such that a tip of the vibrator forms a bottom of the resin pit.

As discussed above, neither Nishimoto nor Sato teaches or suggests applicants' claimed invention, and neither Nishimoto nor Sato discloses applicants' claimed vibrator inserted into a through-hole which communicates with the resin pit, wherein a tip of the vibrator forms a bottom of the resin pit. As explained above, applicants' molding machine achieves superior molding accuracy and quality.

Applicants' claims are further patentable because neither Nishimoto nor Sato discloses applicants' claimed vibrator which is inserted into a through-hole, wherein the through-hole is formed in the same direction as a forward/backward moving direction of the movable mold.

Thus, neither Nishimoto nor Sato teaches or suggests applicants' claimed invention. Nishimoto and Sato disclose nothing that would have suggested applicants' claimed invention to one of ordinary skill in the art. There is no disclosure or teaching in Nishimoto, Sato, or otherwise in this record, that would have suggested the desirability of modifying or combining any portions thereof effectively to anticipate or suggest applicants' presently claimed invention. Applicants respectfully request reconsideration and withdrawal of this rejection.

Accordingly, all claims are now fully in condition for allowance and a notice to that effect is respectfully requested. The PTO is hereby authorized to charge/credit any fee deficiencies or overpayments to Deposit Account No. 19-4293. If further amendments would place this application in even better condition for issue, the Examiner is invited to call applicants' undersigned attorney at the number listed below.

Respectfully submitted,

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